

## **NOTICE OF ALLOWANCE**

### ***Status of the claims***

This action is in response to papers filed July 17, 2009.

The previous rejections in the office action dated May 7, 2009 are withdrawn.

Claims 1, 4, 5, 6, 8 and 10-15 have been allowed. Claims 2-3, 7, 9 and 16-20 have been cancelled in view of a telephone interview with Mr. Bazylenko on July 30, 2009.

## **EXAMINER'S AMENDMENT**

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Bazylenko on July 30, 2009.

The application has been amended as follows:

Cancel claims 2, 3, 7, 9 and 16-20.

In the claims:

Claims 1, 4, 5, 6, 8 and 10-15 are amended as follows:

1. (Currently amended) A monolithically integrated biochip for testing biological substances comprising a plurality of binding sites, optical means for determining a specific binding event at each binding site, wherein the plurality of binding sites are monolithically integrated by processing one substrate with the optical means for

determining a specific binding event which comprise at least one microcavity light source, at least one photodetector and at least one planar waveguide, an evanescent field of light propagating in the waveguide interacting with the biological substance under test, and wherein the dimensions of the microcavity light source are in the order of half wavelength of light to be emitted.

2. (Cancelled).
3. (Cancelled).
4. (Original) A biochip in accordance with claim 1 wherein either or both the light sources and the photodetectors are implemented in a thin film semiconductor layer.
5. (Original) A biochip in accordance with claim 4 wherein the light sources and photodetectors are implemented in the same semiconductor thin film layer.
6. (Original) A biochip in accordance with claim 4 wherein the semiconductor thin film material comprises semiconductor polymer.
7. (Cancelled).
8. (Original) A biochip in accordance with claim 4 wherein the ~~thin film~~ photodetector is a microcavity photodetector.
9. (Cancelled).
10. (Previously amended) A biochip in accordance with claim 1 wherein the means for determining a binding event at each site comprise means for determining a refractive index change associated with a binding event.
11. (Original) A biochip in accordance with claim 10 wherein the means for determining refractive index change comprise a first planar waveguide on surface of which the

binding event occurs, a second planar waveguide located below the first waveguide and separated by coupling layer of lower refractive index than that of the two waveguides.

12. (Original) A biochip in accordance with claim 10 wherein the means for determining refractive index change comprise a first planar waveguide on surface of which the binding event occurs, a grating formed in said waveguide, a second planar waveguide located below the first waveguide and separated by coupling layer of lower refractive index than that of the two waveguides.

13. (Previously amended) A biochip in accordance with claim 1 wherein the means for determining a binding event further comprise a reference light paths provided at each binding site for error correction.

14. (Currently amended) A biochip in accordance with claim 1 wherein the biochip further comprises a ~~further~~ plurality of electrodes to control hybridization conditions at each binding site.

15. (Original) A biochip in accordance with claim 14 wherein the electrodes comprise resistive heater electrodes formed underneath individual binding sites or groups of biding sites.

16. (Cancelled).

17. (Cancelled).

18. (Cancelled).

19. (Cancelled).

20. (Cancelled).

***REASONS FOR ALLOWANCE***

The following is an examiner's statement of reasons for allowance:

Art of the record discussed: Sutherland et al and Kunz et al.

Sutherland et al teaches a device for testing biological substance comprising a binding site monolithically integrated with a light source and a photodetector and a waveguide.

Sutherland et al does not teach a plurality of binding sites monolithically integrated on the substrate. Kunz et al teaches monolithic integration of a light source and a photodetector and a waveguide. However, prior art taken alone or in combination do not suggest or obviate a plurality of binding sites monolithically integrated with the light source and a photodetector and a waveguide as claimed. Furthermore, none of the references of the record either teach or suggest a microcavity light source in the order of half wavelength of light to be emitted is integrated monolithically at each binding sites.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

***Conclusion***

Claims 1, 4, 5, 6, 8 and 10-15 are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Narayan K. Bhat whose telephone number is (571)-272-5540. The examiner can normally be reached on 8.30 am to 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James (Douglas) Schultz can be reached on (571)-272-0763. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Narayan K. Bhat

Examiner, Art Unit 1634

/BJ Forman/

Primary Examiner, Art Unit 1634